

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF VIRGINIA  
DANVILLE DIVISION**

ELDRIDGE ROOSEVELT MEEKS, III,

Plaintiff,

v.

CITY OF DANVILLE, et al,

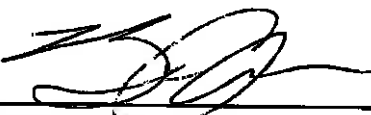
Defendants.

Case No.: 4:20-cv-00029

**REPORT OF BRYAN CHILES**

I, Bryan Chiles, being of legal age and under the penalties of perjury, state as follows:

1. I am a competent adult and have personal knowledge of the following facts or believe them to be true based on information and belief. Facts about which I do not have personal knowledge are of the type reasonably relied upon by experts in this field and have probative value to me in rendering my opinions.
2. Attached is a true and accurate copy of my expert report in the above captioned litigation.
3. The report summarizes my analysis and findings and includes a statement of my opinions. The report also includes data and other information considered by me in forming my opinions and sets out my qualifications (including my Curriculum Vitae).
4. My opinions are expressed to a reasonable, or higher, degree of professional certainty and/or probability.
5. I affirm under the penalties of perjury that the foregoing statements are true and correct.

  
Bryan Chiles

31-MAR-2021  
Date

**FRCP 26(a)(2)(B)(iv) Witness's Qualifications Include<sup>1</sup>**

I am a test engineering professional with an Associates of Science (AS) degree in Electronics. I have invested over 20 years of my career in the testing and troubleshooting of electronic devices in a variety of industries, including test equipment calibration and repair, industrial power electronics, high power electrical distribution and conditioning, energy weapons, cameras, radio frequency (RF) devices, and network information technology equipment (ITE).

After spending 8 years in the calibration & repair and high-power electrical distribution and conditioning industries, I began my career at Axon Enterprise, Inc. (Axon), (then TASER International, Inc. (TASER)), in the summer of 2005 in the Research and Development (R&D) department as an electronics technician. Within 1 year, I began to develop TASER's validation department, designing test methods and managing the validation testing processes. This was a very unique position, as there were no generally accepted standards for validating energy weapons at the time. Using my testing expertise and working closely with the design engineers, I developed and executed the test plans and methods for TASER energy weapons and Axon cameras. In the process of testing energy weapons and cameras, I became intimately familiar with their operation, behavior, and capabilities.

Beginning in 2013, I assumed increased responsibilities and began conducting investigation analysis of energy weapons and cameras involved in field use. Using my expertise in the energy weapon and camera's behavior and logging, I began to analyze specific incidents and generate analysis and expert reports, explaining energy weapon functionality and logging in reference to cases submitted to me.

I was promoted to TASER's Technical Compliance Manager in 2014, where I continued working in and managing the validation department and conducting investigation analysis, and also assumed responsibilities for product compliance to domestic and international technical standards and regulations (i.e. wireless and electromagnetic compatibility (EMC) regulatory compliance, product safety, etc.). In 2016, my position was re-named Product Compliance Manager (which was the same position as Technical Compliance Manager, but with a clarified title), however I relinquished my validation responsibilities to concentrate and focus solely on investigation analysis and product compliance.

In January 2020, I was promoted to Senior Investigations Engineer, where my sole focus is conducting investigation analysis, expert services, and testimony, energy weapon/camera forensic testing, and advanced level customer service. I have presented on energy weapon forensics at the AFTE (Association of Firearm and Tool Mark Examiners) Annual Training Conference (May 2017 in Denver CO) as well as presenting on trial testimony at the Axon

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<sup>1</sup> See current Curriculum Vitae for further details and specifics. My curriculum vitae containing details of my relevant formal education, training, experience, publications authored, and a listing of any cases in which testimony (deposition and/or trial) as an expert has been taken is attached hereto and made an integral part hereof.

Accelerate certification conferences (June 2017 and 2018) and the TASER Master Instructor Schools in 2018 (Sanford, FL, Toronto ON, and Mesa AZ), as well as teaching the interpretation of X2 and X26P energy weapon Pulse Graphs at the TASER Master Instructor School (Sanford, FL 2018). I delivered 4 presentations at the Axon Accelerate 2018 conference June 5-7, 2018, including A Deep Dive into energy weapon Pulse Graphs, Drop 'em, Soak 'em- How we test our energy weapons, Understanding your energy weapon Data, and Testifying on Axon Video Evidence.

I have personally deployed and discharged energy weapons, including the TASER M26, X26E, C2 (a.k.a.- Bolt), Shockwave, X3, XREP, X2, X26P, Pulse, TASER 7, and experimental (in development) energy weapons, hundreds to thousands of times, including deploying energy weapon cartridges thousands of times. I have downloaded TASER energy weapons and reviewed, analyzed, interpreted, and explained the data thousands of times. I have personally operated, downloaded/uploaded, tested, and analyzed Axon BWCs and their recorded videos thousands of times. I have also provided expert testimony on Axon BWCs or TASER energy weapon technology in US federal, state, and foreign courts, as outlined in my attached CV.

**FRCP 26(a)(2)(B)(ii) case specific facts or data considered:**

- Meeks Complaint
- X26P Event Log, generated May 29, 2018
- Pulse Graph for Activation Seq #2
- Corporal Hawkins BWC (2) Video 5-25-2018.mp4
- Officer Amos BWC Video 5-25-2018.mp4
- Officer Pickrel BWC Video 5-25-2018.mp4
- Officer Shively BWC Video 5-25-2018.mp4
- Officer Walker BWC Video 5-25-2018.mp4
- Officer Amos BWC Video 5-25-2018\_audio.mp4
- vlcsnap-2020-12-29-14h39m02s329.png
- Officer Amos BWC Video 5-25-2018mp4\_04-40-391.png
- Officer Amos BWC Video 5-25-2018mp4\_04-44-603.png
- TASER\_X26P\_155\_pulse\_graphs.pdf (X26P pulse graph recreation)

**FRCP 26(a)(2)(B)(ii) non-case specific facts or data considered** (including referenced documents/materials), also, these documents are the FRCP 26(a)(2)(B)(iii) exhibits:

- TASER X2 energy weapon user manual (Revision G, February 2018)
- TASER X2 Specification Sheet (Version 5.0, November 2017)
- TASER Training, User Courses (Version 20.2, January 2018)

### **Brief Background of Events**

In the evening of May 25, 2018, officers with the Danville Police Department (DPD) attempted to detain Mr. Meeks when he attempted to flee. A TASER X26P energy weapon was deployed by an officer during the incident.

### **Brief Summary of Opinions**

1. The X26P energy weapon experienced 1 minute and 18 seconds of positive clock drift (running fast) on May 25, 2018.
2. The X26P energy weapon was trigger activated 1 time on May 25, 2018 at 23:21:48 EDT (clock drift corrected time).
3. The pulse graph for the trigger activation at 23:21:48 EDT indicates the X26P energy weapon X13005R3K discharged into a high impedance load, typical of arcing in open air for the first second, then could no longer discharge due to lack of electrical connection for the final 4 seconds.
4. The video file, *Officer Amos BWC Video 5-25-2018.mp4* captured the entire deployment of the X26P energy weapon at close range.
5. The video file, *Officer Amos BWC Video 5-25-2018.mp4* indicates the X26P energy weapon was arcing in open air for the first second of the trigger activation, as recorded between 04:40 and 04:41 of the video file.
6. The 5 video files recorded during Mr. Meeks' arrest captured that both of the X26P energy weapon's cartridge probes were located on the ground away from Mr. Meeks several minutes after the deployment.
7. Mr. Meeks was not affected at any time by the X26P energy weapon deployment because of lack of a completed electrical circuit.

### **CFRCP 26(a)(2)(B)(vi) Compensation for Study/Testimony in the Case:**

The expert compensation that is expected to be paid in this case to Axon is as follows:

1. **Initial Retainer** - \$0
2. **Report** - \$1,400.00
3. **Testimony, On-Site Visit/Research, Extraordinary Services** - \$200 / hr

To date no invoice has been sent and no payment has been received for this report. No compensation is contingent upon the outcome of this case or the opinions expressed.

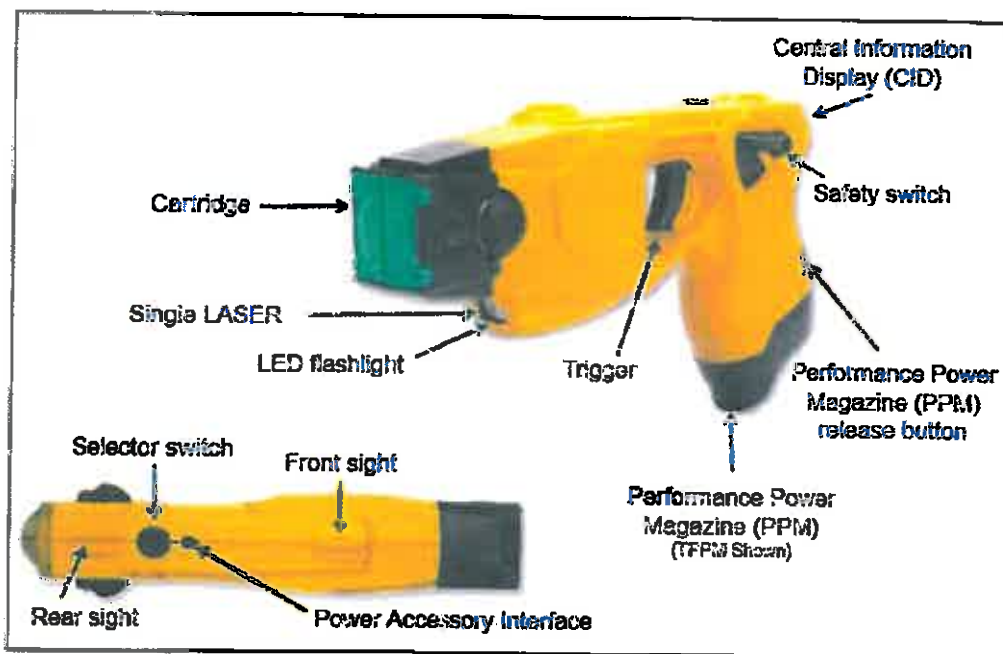
## REPORT AND PROFESSIONAL OPINIONS OF BRYAN CHILES Axon Enterprise, Inc. (Axon)

### Request and Scope of Work:

I was asked by the firm Daniel, Medley & Kirby, P.C. to conduct an analysis of the logs for the X26P energy weapons with serial number X13005R3K (manufactured on May 9, 2017) and video recorded from several Axon Body 2 body worn cameras (BWCs) in reference to the incident on May 25, 2018 at approximately 23:20 Eastern Daylight Time (EDT). The analysis of the X26P energy weapon logs and Axon Body 2 video files was performed at Axon's headquarters in Scottsdale, Arizona, from December 22-29, 2020.

### 1. X26P Energy Weapon Generally:

The TASER X26P energy weapon (first available in January 2013), pictured below in Figure 1-1, is a single-cartridge energy weapon in the Axon Smart Weapons line, available in black or yellow.



*Figure 1-1 – X26P Energy Weapon Anatomy*

**Standard Cartridges:** Like the X26E, the X26P energy weapon uses standard TASER energy weapon cartridges, which are deployed by the electrical arc of the energy weapon when the trigger is pulled.

**Safety Switch:** The X26P features an ambidextrous safety switch. When the safety switch is placed in the up (ARMED) position, the weapon is ready to activate. The X26P will arm

anytime the safety switch is placed in the ARMED position, except when in Universal Serial Bus (USB) mode. The X26P enters power-down mode when the safety switch is placed in the down (SAFE) position.

**Trigger:** When the X26P is armed and the trigger is pulled, it will activate the high voltage pulses, deploying a live cartridge in the cartridge bay, remaining active for 5 seconds at  $19 \pm 1$  pulses per second (pps). If the trigger is pulled and then released, after 5 seconds the high voltage activation will stop. With a standard PPM battery pack, if the trigger is held beyond 5 seconds, the high voltage will remain active as long as the trigger is held or until the battery is depleted, whichever occurs first. If the safety is placed in the down (SAFE) position during any active cycle, the energy weapon will immediately end the discharge and turn off. Axon also offers battery packs that limit each activation to 5 seconds, regardless of the trigger being held (e.g., Auto Shut-Down Performance Power Magazine (APPM) or eXtended Auto Shut-Down Performance Power Magazine (XAPPM)). The APPM gives an audible beeping warning tone at the 4<sup>th</sup> second of the activation until the activation stops or the trigger is released. With the APPM, another 5-second activation can only be initiated by pulling the trigger again.

**SPPM:** The Signal Performance Power Magazine (SPPM) is a battery pack offered by Axon that, when the energy weapon is armed, will send a wireless signal, allowing compatible devices to perform a pre-programmed response (e.g., a configured Axon body worn camera may automatically begin an event recording). The SPPM sends status information within the signal, including when the energy weapon is armed, the energy weapon is armed for longer than 10 seconds, and the trigger has been pressed (while armed).

**Path Sense and "Skip Pulse":** Beginning in firmware version 04.032, when the X26P is trigger activated it will pulse at 19 pulses per second (PPS). If the CEW senses at any time that it cannot discharge due to a lack of electrical path (i.e.- a missed probe on a deployment), it will automatically reduce the pulse rate to 8 PPS to reduce stress on the high voltage components. If it senses a change in the path at any time and that it can discharge again, it will automatically increase the pulse rate again to 19 PPS.

**Menu and Selector Button:** The X26P menu is used to read or change the LASER (Light Amplification by Stimulated Emission of Radiation) and flashlight illumination settings. The illumination menu can be selected by pressing the Selector Button on the top of the weapon while in safe mode. Note that the X26P can be armed with the safety switch and activated at any time, even when the weapon is in the illumination settings. When the X26P is armed, the Selector Button will put the weapon in "stealth" mode, which will dim the Central Information Display (CID) and turn off the LASER and flashlight.

**Trilogy Logs:** The X26P records information into the Trilogy Logs, which consist of the Event Log, the Pulse Logs, and the Engineering Logs.

**Event Log:** The Event Log is a recording of the date, time, and details of each event



that occurs with the X26P, including every time the weapon is armed, the trigger is pulled, the illumination menu is accessed, the time is changed, the safety switch is placed in the safe position, USB mode is entered, the firmware is updated, and more. Relevant events also include the internal temperature of the weapon, the duration of the event (rounded up to the nearest second), and the battery percentage remaining at the time of the event. The Event Log will record approximately 16,000 entries before it will “wrap” and begin to overwrite the oldest entries.

**Pulse Logs:** The Pulse Logs are a recording of every pulse that is generated by the X26P. There are 3 measurements recorded for each pulse: (1) the voltage across the stimulation capacitor; (2) the voltage across the arc capacitor; and (3) the charge delivered from the X26P output. The Pulse Log is an allocated part of memory and records each pulse from each activation, regardless of the duration of the activation. Therefore, the amount of activations stored in the Pulse Log is variable and dependent on the duration of the activations. Based on 5-second activations only, the Pulse Log will store 422 activations before the memory fills up. Once the memory is full it will delete the oldest sector of memory to free up space, which will delete the oldest 40 (5-second) activations. However, based on specific usage, the number of activations stored in the Pulse Log could be more or less.

**Engineering Logs:** The Engineering Logs are a recording of all activity in the X26P. The Engineering Log records, along with a timestamp, every button push, microprocessor command, circuit status, reported errors, faults and more. The Engineering Logs are only accessible by Axon Engineering and are used for troubleshooting purposes or acquiring deeper information about a specific activation or incident.

**Clock Drift:** The internal Real Time Clock (RTC) of the X26P energy weapon is set at the factory in reference to Universal Time Constant (UTC). Any conversions to local time are calculated by Evidence Sync software and Axon Evidence (Evidence.com). Due to internal component tolerances and environmental conditions, the internal clock of an X26P energy weapon can drift up to  $\pm 2$  minutes per month. The amount of drift observed in the Trilogy Logs will vary depending on the physical tolerances of the energy weapon's components, remaining battery capacity, environmental conditions, and how long the energy weapon's RTC has been running since its last synchronization.

**USB:** The X26P is downloaded by connecting the energy weapon to a proprietary USB pack that inserts into the energy weapon's battery pack compartment. Once connected to USB, the X26P will enter USB mode and the energy weapon's Trilogy Logs can be downloaded to a local Personal Computer (PC) or network or uploaded to Axon Evidence (Evidence.com) using Evidence Sync™ software. USB mode also allows the synchronization of the X26P clock, firmware updates, and configuration setting.

**Effectiveness:** TASER energy weapons are designed to cause Neuromuscular Incapacitation (NMI) when certain conditions are met. These required conditions include, but are not limited to:

- There is a completed and maintained circuit between the electrodes (or probes) to allow electrical current to flow;
- There is sufficient spread, or distance, between the electrodes; and
- There is sufficient motor-nerve mediated muscle mass between the electrodes.

When the X26P energy weapon is trigger activated and all required conditions are simultaneously met, the subject will likely experience some degree of NMI, in which some of his/her muscles will contract and the subject loses at least some volitional muscle control of the affected muscles.

The effectiveness of an energy weapon to cause NMI is not always either 100% or 0%. Depending upon, among other factors, the spread between the probes, location of the probes on the subject's body, clothing, movement, environmental factors, assuming there is a completed circuit, the effective NMI on an energy weapon deployment varies with the associated factors.<sup>2</sup>

**Pulse Graphs:** The Pulse Graphs available on Evidence.com are created from the Pulse Logs in the energy weapon, which contain electrical information about every pulse that the energy weapon discharges. Durations in the Event Log are rounded up to the second, while the durations in the Pulse Graphs are accurate to 1/10<sup>th</sup> (or 0.1) of a second.

The X26P records information in the Pulse Logs, which includes the (1) arc voltage, (2) stimulation (stim) voltage, and (3) output charge.

- The arc voltage is the voltage across the arc capacitors in the X26P energy weapon's high voltage module. This voltage gives indication of what level the capacitors needed to be in order to produce an electrical arc.
- The stim voltage is the voltage across the stimulation capacitor in the X26P energy weapon's high voltage module. The stim voltage indicates the voltage that the stimulation capacitor charged up to when an electrical pulse was generated.
- The output charge is the value of the charge (electrical current over time) measured in microcoulombs ( $\mu\text{C}$ ). One (1) Coulomb is equal to one (1) ampere over one (1) second, so one (1) microcoulomb is equal to 0.000001 amperes per second.

The Arc and Stim voltages give an indication of the load impedance (high or low) and whether the load was stable or not.

**High Impedance Load:** The load impedance can be high when the cartridge probes

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<sup>2</sup> Ho J, Dawes D, Miner J, Kunz S, Nelson R, Sweeney J. Conducted electrical weapon incapacitation during a goal-directed task as a function of probe spread. *Forensic Sci Med Pathol*. Apr 2012.



partially connect and arc through skin, drive-stun applications, or with probes contacting a subject with high adipose fat tissue content.

**Low Impedance Load:** The load impedance can be low when arcing across the front of the cartridge or cartridge bay, arcing in water, shorted across metal, or with probes contacting a subject with low adipose fat tissue content.

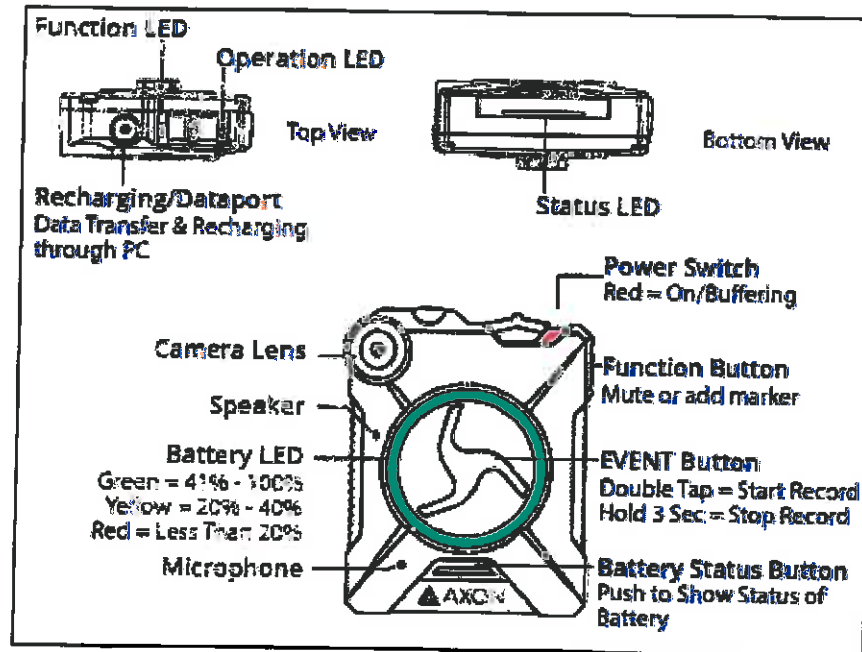
The output charge indicates whether the capacitors discharged. Based on the extreme variation of loads that the X26P output can arc across, the pulse graphs alone cannot determine the exact situation of an energy weapon discharge, but rather can be combined with other incident-specific information/reports to imply the type of load, if any, the X26P energy weapon discharged into. The only definite indications the output charge can provide is when no charge is delivered (0 microcoulombs) or if the charge is within specification when the charge is delivered.

The X26P energy weapon uses Charge Metering to attempt to regulate the output charge to a target level. When the X26P energy weapon is trigger activated, it charges the arc and stimulation capacitors to a nominal voltage. When the capacitors are signaled to discharge, the output charge is measured. If the charge is lower than the target value (high impedance load), the charge voltage of the arc and stim capacitors is increased. If the charge is higher than the target value, the charge voltage of the arc and stim capacitors is lowered. The charge is measured again on the next pulse and the voltage is again adjusted accordingly. This algorithm is constantly metering and adjusting the output to keep the charge regulated. If the load impedance is very high, resulting in a low charge, the arc and stim voltages are increased up to a threshold value where it reaches the maximum voltage allowed for the capacitors. The X26P energy weapon will continue at this maximum value until the charge value is increased to the target value. Once the capacitors are at their maximum permitted voltage, it is impossible to increase the charge unless the load impedance drops. If the load impedance drops and the charge increases above the target value, the X26P energy weapon will lower the charge voltage on the arc and stim capacitors until the charge drops to the target value.

Because the effectiveness of an energy weapon is dependent on a variety of factors, including, among others, having a closed circuit, probe spread, and location of the probes, the Pulse Logs alone do not indicate whether an activation was effective or not. The Pulse Logs alone can only determine if there was potential for effectiveness, given the conditions for effectiveness are met.

Although the Pulse Logs give confirmational indication of the type of load the energy weapon discharged into (or did not discharge), the logs alone cannot indicate with certainty if a trigger activation was initiated with a cartridge or not, nor can it indicate with certainty whether a discharge was through probes of the cartridge or directly to the load in a drive-(contact or touch) stun method.

## 2. Axon Body 2 Camera Generally



*Figure 2-1 – The Axon Body 2 Generally*

The Axon Body 2 camera is an on-officer video and audio recording system that can record up to 1080p resolution. When powered on via the camera's power slide switch, the system boots up and enters "Buffering Mode," where it begins buffering up to a configurable time duration (30 seconds default) of video (no audio per default configuration) into memory. When the camera's event button is pressed twice, the system enters "Event Mode," where it begins recording video and audio (depending on audio settings) and gives an audible (depending on the tone volume level) double-beep tone, as well as configurable haptic (vibration) feedback. The device has 4 tone volume levels: mute, low, medium, and high. The event tone is repeated every 2 minutes as long as the device remains in Event Mode. A recording can also be started via a wireless interface by Axon's connected devices, such as Axon Signal Vehicle, Signal Performance Power Magazine for TASER energy weapons, Axon Signal Sidearm, or Axon Fleet in-car cameras.

The Axon Body 2 camera will store approximately 64 GB of video data in non-volatile flash memory. If there is an insufficient amount of memory to record a video file, the camera will issue warning tones (3 fast beeps and 3 vibrations) and will not record the video. If memory runs out of space while a video is in progress of being recorded, the camera will stop recording the video.

Event Mode is stopped by either: (1) holding the camera's event button down for at least 3 seconds (a temporary press of the button will not stop Event Mode); (2) powering off the camera with the camera's power slide switch; or (3) a depleted battery. An event cannot be

stopped via wireless interface.

The Axon Body 2 camera records video files in 30-minute segments in MP4 format. The first segment usually contains the configured pre-buffered video with no audio (default configuration) for a maximum of 120 seconds (30 seconds default). If a recording is started within the configured buffer time of powering on the system or within the buffer time after an event ends, the buffer time will be less than the configured number of seconds. For instance, if the buffer is configured for 30 seconds, but an event is started 14 seconds after powering on (or after an event is stopped), that event's buffer will only be 14 seconds, not the full 30 seconds. If an event is longer than 30 minutes, the video segments will be "spliced" into a single file in MP4 format for up to a 4-hour video duration for easier viewing before it is uploaded. Durations over 4 hours will be in separate MP4 files. The files are stored on the BWC in an incrementing filename sequence (i.e., E0001.MP4, E0002.MP4, etc.), but then are renamed when downloaded to include the BWC's serial number and the date & time that the recording started.

Before being attached to an event recording, all buffer video is stored in volatile memory. When the camera is powered off, the volatile memory is cleared and the buffer video that is not attached to an event is lost. Buffer video cannot be recovered after it is over-written or the camera is powered off.

The Axon Body 2 camera also records information into a log file for engineering, investigative, accountability, and audit tracking purposes. This file can only be accessed by Axon; however, information from the file can be accessed in the device's audit log on Axon's digital evidence management software, Axon Evidence (Evidence.com) (when uploaded in Online mode). The log file contains various information, including the system status, battery voltage, button presses, modes and faults. The log file is created with timestamps for each log event entry. The timestamps in the log file are referenced to the time zone of the computer in which they were translated with, but Evidence.com will convert the displayed times (except for the video's watermark timestamp) to the assigned user's time zone when displayed in an Audit Log.

The internal RTC of the Axon Body 2 camera is set at the factory to reference to Universal Time Constant (UTC). Any conversions to local time are calculated by Evidence Sync software, Axon Evidence (Evidence.com), Axon mobile apps, Axon Commander, or Axon View XL. Due to electrical component tolerances and environmental conditions, the internal RTC of the Axon Body 2 camera can have a free-running drift of up to  $\pm 1$  minute per month. The amount of drift observed in a recording will vary depending on the physical tolerances of the camera's components, charge level of the battery, environmental conditions, and how long the camera's clock has been running since its last synchronization.

Files from the Axon Body 2 camera are downloaded using 3 methods: Evidence Sync software, Axon Dock, or USB offload using Axon Commander. The Axon Body 2 camera is configured at the factory for Offline or Online operation.

- In Offline Mode, the camera can be downloaded to a local drive or network. The files are maintained by the user, as to downloading and/or deleting.
- In Online Mode, the camera can only be uploaded to the assigned evidence.com account. Files are only deleted once successful upload to evidence.com is verified. An Audit Trail is maintained to log all access to the files.

Unless placed in Stealth Mode, the Axon Body 2 camera gives audible and physical status notifications to the user in the form of an audible beep and haptic vibration. The camera will issue notifications in the following manners, depending on the operating mode or status:

Operating Mode	Audio Notification	Haptic Notification (Vibration)
Powering on or off	One beep	Once
Recording an event	Two beeps (every 2 minutes)	Twice (every 2 minutes)
Press the Battery button while the camera is recording	Two beeps	None
The device is ending an event and returning to BUFFERING mode	One long beep	Once, long-duration
The battery is at 20 percent capacity or lower	Four quick beeps (every 5 minutes)	Four times, quickly (every 5 minutes)
The camera memory is full (the camera will not record)	Three beeps	Three times
The camera internal clock is not set. Place in an Axon Dock or connect to the Evidence Sync application to correct this issue.	Five quick beeps (every 20 seconds)	Five times, quickly (every 20 seconds)

In the factory default configuration, the Axon Body 2 BWC's event recording contain a "watermark" in the upper right-hand corner of the screen. The watermark contains the Axon "delta" logo, the camera's serial number, model "Axon Body 2," and the running date and time. The date and time are shown in reference to UTC, which is denoted by a "Z" after the running time (the "Z" stands for "Zulu" time - which is another name for UTC). The correct local time of the video recording can be calculated by subtracting or adding the number of hours the local time zone is from UTC. For example, in the State of Virginia during Daylight Savings, the local time zone is 4 hours behind UTC, so you would subtract 4 hours from the time displayed in the watermark to calculate the local time in Virginia at the time a recording.

### 3. Log Data Analysis for the X26P Energy Weapon:

#### Event Log:

The Event Log and the associated Pulse Graph for the X26P energy weapon X13005R3K were sent to Axon on December 18, 2020 in a file named *SKM\_C36820121515250.pdf*. The file is 5

pages long and contains a printout of the evidence page for the X26P evidence titled "TASER X26P CEW Log 2018-05-26 00" on Axon Evidence (3 pages, stamped CITY0005 to CITY0007), the date-filtered Event Log from the X26P energy weapon (1 page stamped CITY0032), and a Pulse Graph for the trigger activation of the X26P energy weapon that was initiated at 23:23:06 on May 25, 2018 (1 page stamped CITY1773).

The Event Log indicates that after to the reported incident on May 25, 2018, the X26P energy weapon's clock was synchronized the less than 1 hour after the incident (Seq #6). At that time, the clock was recorded to be running 1 minute and 18 seconds fast (ahead). The most accurate time of the events on May 25, 2018 is calculated by subtracting 1 minute and 18 seconds from the recorded times.

The event log indicates that the X26P energy weapon was trigger activated 1 time on May 25, 2018. The Event Log recorded the following events, including the clock drift corrected times:

*Table 3.1- Event Log Event + Clock Drift Correction*

Line	Recorded Time (EDT)	Corrected Time (EDT)	Event	Duration (seconds)
1	5/25/2018 23:23:05	5/25/2018 23:21:47	Armed (Safety Off)	NA
2	5/25/2018 23:23:06	5/25/2018 23:21:48	Trigger	5
3	5/25/2018 23:23:40	5/25/2018 23:22:22	Safe	35
4	5/25/2018 23:23:45	5/25/2018 23:22:27	SPPM EOT	NA
5	5/26/2018 0:10:24	5/26/2018 0:09:06	USB Connect	NA
6	5/26/2018 0:10:56	5/26/2018 0:09:38	Time synchronization	NA

The Event Log indicates that at the time the Event Log report was generated (May 29, 2018), the X26P energy weapon was running firmware version 04.032.

#### **Pulse Graph:**

The time displayed in the Pulse Graph below is referenced to EDT. Based on the above Event Log entries and Pulse Graph information, details of the X26P energy weapon's activation on May 25, 2018, and the associated Pulse Graph, are below (the time in the graph and the times described below do not include clock drift compensation):



### Activation Sequence #2

The X26P energy weapon was armed on May 25, 2018 at 23:23:05 EDT by the safety switch as indicated on Seq 1. One (1) second later, the X26P energy weapon was activated via the trigger switch at 23:23:06 EDT as indicated on Seq 2. The graph below indicates that the energy weapon was active for 5 seconds. The X26P had an output charge that varied from approximately 20 to 50  $\mu\text{C}$ , and an average capacitor charge voltage of approximately 950 volts on the Arc Capacitor, and 2,900 to 3,100 V on the Stimulation capacitor. The graph indicates the X26P discharged into a high impedance load, typical of arcing a long distance in air (i.e. as in arcing from wire to wire) or discharging into tissue with very high resistance for 1 second, then changed to not being able to discharge due to a lack of electrical connection for the last 4 seconds. The X26P was placed in Safe mode at 23:23:40 EDT via the safety switch, as indicated on Seq 3, then the SPPM ended its wireless broadcast at 23:23:45 EDT, as indicated on Seq 4.

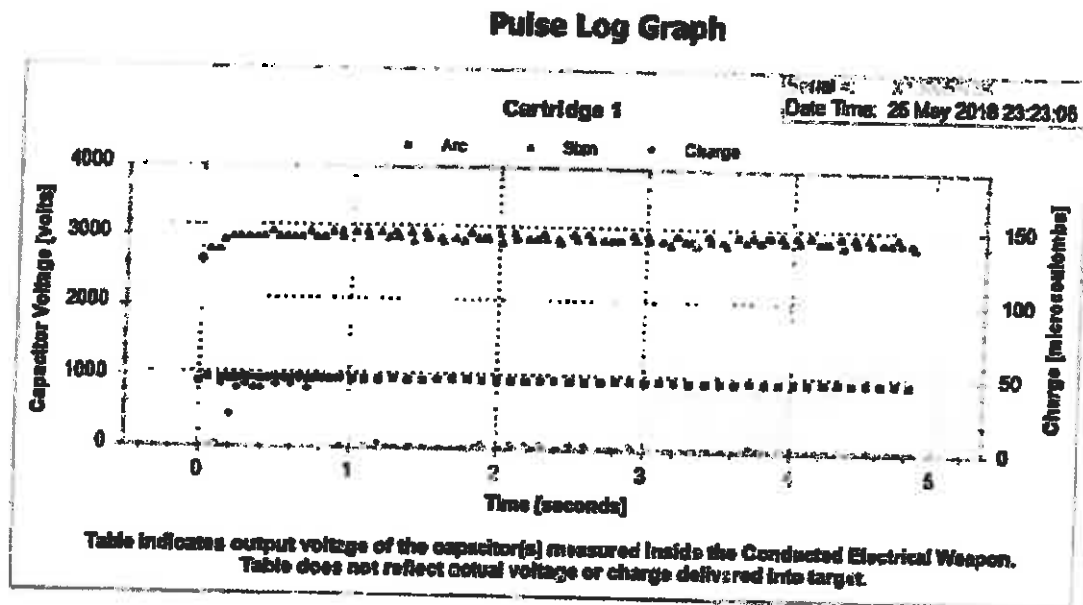


Figure 3-1 – Activation Sequence 2

#### 4. Body Worn Video Analysis & The Significance of Sound:

Five (5) video files that were recorded via Axon Body 2 cameras during the incident on May 25, 2018 were reviewed to determine if there was an electrical connection to Mr. Meeks in the first second of the X26P energy weapon activation.

**The Significance of Sound:** The audible sound that an X26P energy weapon makes during a deployment will vary depending on whether there is a probe connection to tissue or not<sup>3</sup>,

<sup>3</sup> M. Kroll, "Significance of Sound During CEW Application," Technical Report, pp. 1-3, 2013. DOI 10.13140/RG.2.1.2262.9925.



and where the wires are situated during the activation cycle.

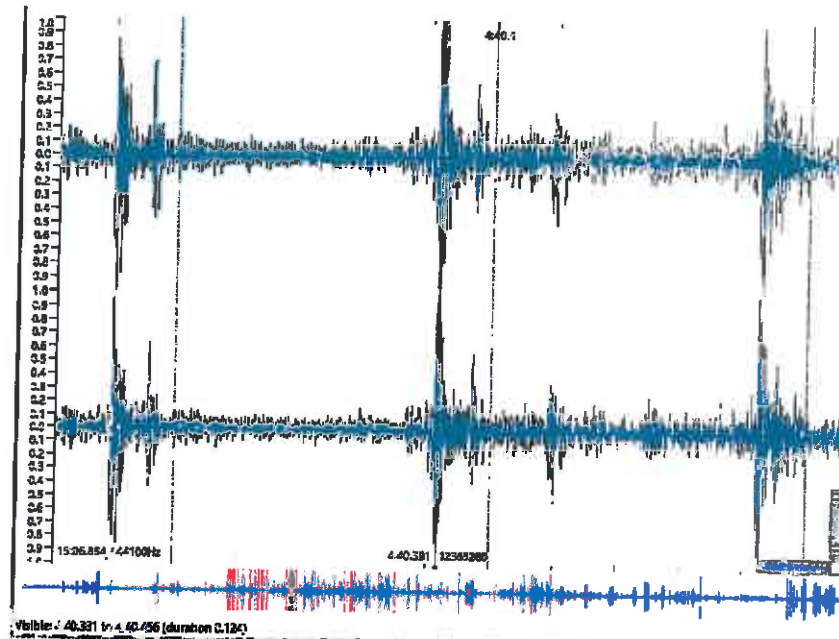
When the X26P energy weapon is discharging through an arc (which occurs when the high voltage ionizes the air molecules and makes a conductive path), it makes a loud “clacking” sound (approximately 80 dBA at 1 meter). However, when the electricity is discharging through the probes into conductive tissue, the high voltage arcing is not generated, and the sound is significantly less loud (approximately 50 dBA) and can be described as a soft “ticking” sound.

Another situation that occurs with a soft “ticking” sound generated is when an energy weapon is deployed, but the probes do not hit a conductive target, and the wires end up laying on top of each other or very close together. In this situation, the wires being close together create a pseudo capacitor that absorbs and dissipates energy, however since there is no electrical connection at the probe, the weapon cannot discharge. Because the weapon cannot discharge and there is no arcing, this also results in a soft “ticking” sound rather than the loud “clacking” of the high voltage arc.

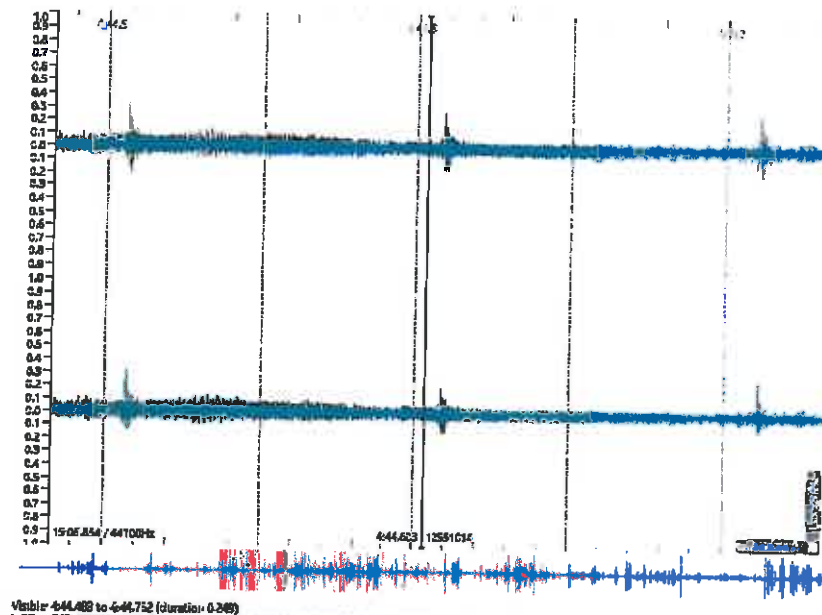
Consistent with the pulse graph showing there was not an electrical connection to Mr. Meeks, all 5 video recordings captured when both probes from the X26P energy weapon were located on the ground at 23:29 EDT, although one probe appeared to have red material on the barb, which could have come from Mr. Meeks’ red shirt. None of the videos capture the probe locations at the time of the cartridge deployment and for the first second of the activation. For this, the audio of the deployment is the best evidence to analyze on whether there was an electrical connection to Mr. Meeks or not.

**Deployment Sound:** Only one of the 5 video files captured the X26P energy weapon deployment at close enough range to clearly capture the sound of the entire activation; Officer Amos BWC Video 5-25-2018.mp4. The deployment of the cartridge (the trigger pull) is initiated 4 minutes and 40 seconds into the video file. After the “pop” sound of the cartridge deployment, there is one second of “clacking” sound consistent with the X26P arcing in air, indicating there was no electrical connection in the first second of the activation. After 1 second, there is a soft “ticking” sound consistent with the pulse graph’s indication that there was no discharge and the wires being deployed from the cartridge, causing capacitive coupling, and consistent with both probes being located on the ground rather than embedded in Mr. Meeks’ skin.

The “clacking” sound between 04:40 and 04:41 in the video and the soft ticking sound between 04:41 and 04:45 of the video were analyzed using Sonic Visualizer version 4.2 to give a visual display of the sound profile. The “clacking” sound in the first second of the video is consistent with an energy weapon arcing in open air.



*Figure 4-1 - "Clacking" sound captured at 04:40.391*



*Figure 4-2 - "Ticking" sound captured at 04:44.603*

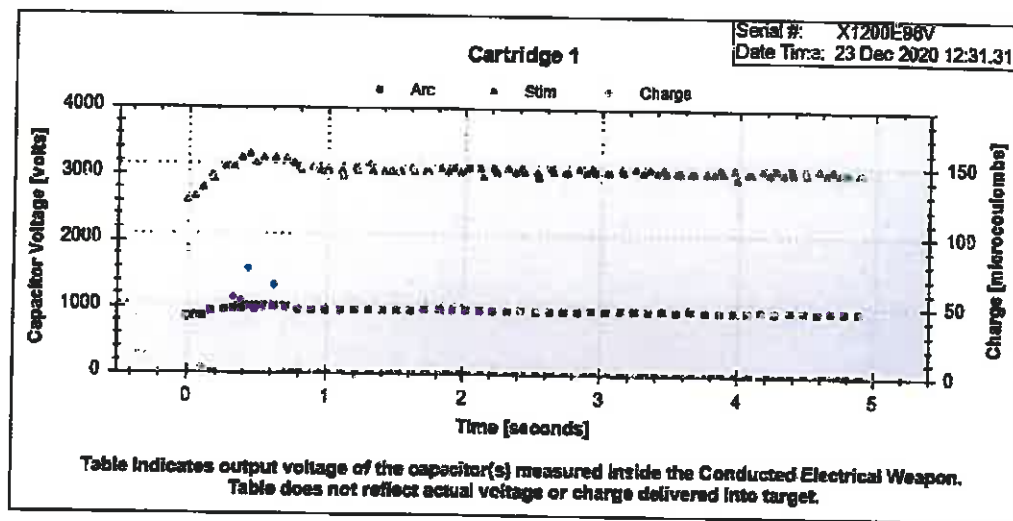
## 5. Pulse Graph Re-creation:

For clearer demonstration, the scenario of an X26P energy weapon deployment missing a conductive target was re-created in a laboratory by intentionally missing the conductive area of a practice target. The pulse graph of the deployment was downloaded (see Figure 5-2

below) and analyzed. The pulse graph of the missed deployment in the lab is strikingly similar to the pulse graph of the X26P energy weapon deployment toward Mr. Meeks on May 25, 2018, in which it shows initial arcing for the majority of the first second followed by no electrical connection due to lack of connection and the wires settling on the ground.



*Figure 5-1 – Missed Probe Re-creation*



*Figure 5-2 – Missed Probe Pulse Graph*

## 6. Conclusion and opinions:

Based on my training, experience and education, and consideration of the physical and documentary evidence presented, research, investigations, related testing and findings, I have the following opinions, all to a reasonable, or higher, degree of professional and scientific certainty and/or probability:

1. The X26P energy weapon experienced 1 minute and 18 seconds of positive clock drift (running fast) on May 25, 2018.
2. The X26P energy weapon was trigger activated 1 time on May 25, 2018 at 23:21:48 EDT (clock drift corrected time).
3. The pulse graph for the trigger activation at 23:21:48 EDT indicates the X26P energy weapon X13005R3K discharged into a high impedance load, typical of arcing in open air for the first second, then could no longer discharge due to lack of electrical connection for the final 4 seconds.
4. The video file, *Officer Amos BWC Video 5-25-2018.mp4* captured the entire deployment of the X26P energy weapon at close range.
5. The video file, *Officer Amos BWC Video 5-25-2018.mp4* indicates the X26P energy weapon was arcing in open air for the first second of the trigger activation, as recorded between 04:40 and 04:41 of the video file.
6. The 5 video files recorded during Mr. Meeks' arrest captured that both of the X26P energy weapon's cartridge probes were located on the ground away from Mr. Meeks several minutes after the deployment.
7. Mr. Meeks was not affected at any time by the X26P energy weapon deployment because of lack of a completed electrical circuit.

**General Comments:**

**Report Focus** – This report is focused solely on the incident captioned and related concerns and/or issues.

**This Case Specific Limitation** – Any actions, statements, writings, this report, information, any testimony, etc. are specifically limited to this case.

**Expert Capacity** – This report and any subsequent reports, testimony, opinions, etc. are within my capacity as a Technical Compliance Manager for Axon Enterprise, Inc. (Axon), a Delaware corporation, with its principal place of business in Scottsdale, Arizona.

**Right to Amend** – The opinions in this report are living opinions. That is, should additional discovery material be received, and/or additional research be completed, and then reviewed, these opinions may be altered and/or reinforced depending upon what information is obtained, reviewed, considered, and/or studied.

**Further Development** – The opinions expressed in this report are not necessarily final in nature. Rather, they are listed to comply with current report requests. Each opinion may be further developed through research, investigation, during deposition, and/or trial testimony.

**Specific References** – Some of the opinions in this report may list specific references to some of the documents reviewed and/or considered or specific references. These listings are

not intended to be all inclusive. I specifically reserve the right to supplement the support for each of the opinions in this report.

**Newly Identified Issues** – If new issues are opined, identified, and/or developed subsequent to submission of this report, I reserve the right to supplement this report.

**Degree of Certainty** – All opinions stated in this report are in direct regard to the case captioned, and the underlying incident or events leading to this case, and are expressed to a reasonable, or higher, degree of professional certainty and/or probability.

**Credibility Determinations** – Credibility determinations are solely and exclusively within the province of the trier of fact.

This report is based on information that is known to me at the present time. I may therefore be apprised of additional information which may cause revision or supplementation of this report, and I expressly reserve the right to do so. In addition, I reserve the right to revise and supplement this report based upon information that may hereafter be provided to me, or which becomes available to me through continued investigation research or study.

I reserve the right to revise and supplement this report in order to clarify, add, or complete questions or statements at deposition, or at the request of counsel for clarification, organization or completeness of any matters pertaining to this investigation or report.

The opinions provided in this case were developed based upon my education, training, experience, and specialized knowledge.

**FRCP 26(a)(2)(B)(v) Prior Expert Testimony** – I have testified as an expert at trial or by deposition within the last four years in the following cases:

*Refugio Nieto and Elvira Nieto v. City and County of San Francisco*, United States District Court for the Northern District of California, Civil Action No. C14-03823-NC

- Deposition on September 28, 2015 in Phoenix, AZ
- Trial Testimony on March 7, 2016 in San Francisco, CA

*Commonwealth of Pennsylvania v. Lisa Joellen Mearkle*, Dauphin County Court of Common Pleas, Criminal Docket CP-22-CR-0002379-2015

- Trial Testimony on November 3, 2015 in Harrisburg, PA

*Catrice Pierre, et al v. Lee Hardy, et al*, U.S. District Court, Eastern District of Louisiana, Civil Action No. 12-1891

- Deposition via telephone on December 21, 2015 from Scottsdale, AZ, both parties counsel in Metairie, LA
- Trial Testimony on September 13, 2016 in New Orleans, LA.

*International Brotherhood of Police Officers, Local 537 – Jonathan Adams v. City of Pueblo, CO*, Arbitration Tribunals of the American Arbitration Association, Case No. 01-15-0005-0390

- Arbitration Testimony on March 23, 2016 in Pueblo, CO

*The State of North Carolina v. Bryon Vassey*, State of North Carolina, County of Brunswick, In the General Court of Justice, Superior Court Division, Case No. 14-CRS-000247

- Trial Testimony on April 28, 2016 in Bolivia, NC

*The State of California v. Ignacio Canela*, Superior Court of California, County of San Diego, Central Division, Case No. SCD251838

- Trial Testimony on May 23, 2016 in San Diego, CA

*Robert Jackson III v County of San Bernardino, et al*, United States District Court, Central District of California, Case No. EDCV 13-01650 JGB (DTB)

- Deposition via Telephone on May 25, 2016 in Scottsdale AZ, both parties counsel in Woodland Hills, CA
- Trial Testimony on July 14, 2016 in Riverside, CA

*The Commonwealth of Virginia v. Stephen Rankin*, Portsmouth Circuit Court, Case No. 15-1398

- Trial Testimony on July 29, 2016 in Portsmouth, VA

*The State of South Carolina v. Michael Slager*, Charleston County Judicial Center, Case No. 09C-0303420

- Trial Testimony on November 7, 2016 in Charleston, SC

*The State of Georgia vs. Marcus Eberhart and Howard Weems*, Fulton County Superior Court, Criminal Division, Case No. 15SC136846

- Trial Testimony on December 9, 2016 in Atlanta, GA

*Travis Hermiz vs. City of Royal Oak Police Chief, Budzynowski, Wern, et al*, United States District Court, Eastern District of Michigan, Southern Division, Case No. 16-11214

- Trial Testimony on September 26, 2017 in Detroit, MI

*Shainie Lindsey, et al. vs. City of Pasadena, et al*, United States District Court, Central District of California, Case No. 16-CV-8602-SJO(RAOx)

- Deposition Testimony via telephone on November 29 & 30, 2017 in Scottsdale, AZ

*Allan F. White, et al. vs. Bradley County, et al*, United States District Court, Eastern District of Tennessee, Case No. 1:16-CV-322

- Deposition Testimony via telephone on December 5, 2017 in Scottsdale, AZ



*April Damiani, vs. Michael Allen, et al*, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Deposition Testimony via telephone on February 5, 2018 in Scottsdale, AZ

*Hererra vs. The State of Arizona, et al*, United States District Court, District of Arizona, Case No. CV14-2278

- Trial Testimony on September 18, 2018 in Tucson, AZ

*Kitchen vs. Tegtmeier, et al*, United States District Court, Northern District of Illinois, Eastern Division, Case No. 1:15-cv-06781

- Trial Testimony on October 17, 2018 in Chicago, IL

*Inquest in the Death of Josh Pitt*, In the Bedfordshire & Luton Coroner's Service, Luton, United Kingdom

- Inquest Expert Testimony on January 10, 2019 in Luton, England, UK

*Aguilar -v- LAPD*, United States District Court, Central District of California, Case No. 2:17-cv-04382

- Trial Testimony on May 1, 2019 in Los Angeles, CA

*Grand Jury Investigation*, Circuit Court of the Second Judicial Circuit in and for Franklin County Florida, Case No. 2019-002726

- Grand Jury Testimony on July 11, 2019 in Apalachicola, FL

*Commonwealth of VA -v- Douglas Johnson*, Circuit Court of the State of Virginia, in the Circuit Court of the Twentieth Judicial Circuit, Case No. CR00032244

- Trial Testimony on August 22, 2019 in Leesburg, VA

*The State of Florida -v- Nikolas Cruz*, Circuit Court of the 17<sup>th</sup> Judicial Circuit, in and for Broward County, Florida, Case No. 18014129CF10A

- Deposition Testimony on October 4, 2019 in Scottsdale, AZ (via Zoom video stream/telephone)

*Rakeyia Scott -v- The City of Charlotte*, In the General Court of Justice, State of North Carolina, County of Mecklenburg, Superior Court Division, Case No. 18-cvs-16700

- Deposition Testimony on November 8, 2019 in Scottsdale, AZ

*The State of Oklahoma -v- Byron James Shepard*, In the District Court of the Twenty-Third Judicial District of the State of Oklahoma Sitting in and for Pottawatomie County, Case No. CF-2017-176

- Trial Testimony on November 21, 2019 in Shawnee, OK

***Frazier -v- Erik Miller***, Montana Third Judicial District Court, Powell County, Case No. DV-17-97

- Trial Testimony on December 5, 2019 in Deer Lodge, MT

***Sneed -v- Michael, et al***, In the Circuit Court of Jackson County, State of Missouri, Case No. 1816-CV-25106

- Deposition Testimony on January 15, 2020 in Phoenix, AZ

***April Damiani, vs. Michael Allen, et al***, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Trial Testimony on January 24, 2020 in Evansville, IN

***Whobrey -v- City of Danville***, United States District Court, Central District of Illinois, Urbana Division, Case No. 19-cv-2074

- Deposition Testimony on May 5, 2020 in Scottsdale, AZ (via online video stream)

***Henderson -v- City of Torrance***, United States District Court, Central District of California, Case No. 2:18-cv-03918-MWF-Ex

- Deposition Testimony on June 8, 2020 in Fountain Hills, AZ (via online video stream)

***Grand Jury Hearing***, Circuit Court of the Second Judicial Circuit in and for Leon County Florida, Case No 2020-00043446.

- Grand Jury Testimony on September 3, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)

***Grand Jury Hearing***, Office of the District Attorney, Westchester County, NY, Case No HB20-074.

- Grand Jury Testimony on October 28, 2020 in Westchester, NY (via video stream from Scottsdale AZ)

***Adkins -v- Roberts***, United States District Court, Northern District of Florida, Panama City Division, Case No. 5:18-cv-271-MCR/MJF.

- Deposition Testimony on December 1, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)

## **Curriculum Vitae**

**Bryan D. Chiles**  
**17800 N. 85<sup>th</sup> Street**  
**Scottsdale, AZ 85255**  
**bchiles@axon.com**

### **SUMMARY**

Over 15 years of Research & Development, Validation testing, Compliance Engineering, and forensic testing and analysis for Axon Enterprise, Inc (formerly TASER International, Inc.). Over 18 years in the electrical, mechanical, and environmental testing. Over 20 years in the electronics and test equipment industry.

### **EXPERIENCE**

**2005-Present**

**Axon Enterprise, Inc.**  
**Scottsdale, AZ**

<b>2019 - Present</b>	<b>Sr. Investigations Engineer</b>
<b>2014 - 2019</b>	<b>Product Compliance Manager</b>
<b>2013 - 2014</b>	<b>Technical Forensics Specialist</b>
<b>2011 - 2014</b>	<b>Validation Test Manager</b>
<b>2006 - 2011</b>	<b>Validation Test Supervisor</b>
<b>2005 - 2006</b>	<b>Research &amp; Development Technician</b>

#### **Sr. Investigations Engineer**

As the Sr. Investigations Engineer, I report to the Vice President and Associate General Counsel and have the responsibility to: manage and conduct investigations for Axon customers, attorneys, or civilians. I design and conduct investigative tests and processes, including research and scenario-based tests, determining the highest forensic value of data and physical evidence relating to TASER Conducted Energy Weapons (CEWs) and Axon body worn cameras (BWCs). Using test equipment and software tools, I determine all possible means to download and test devices and evidence submitted to Axon by customers and/or their representing attorneys for formal investigation, interpret downloaded data, and submit the results to the requesting party in a formal report format, or via phone, email, or in person. I also author expert reports for customers and/or their representing attorneys and, upon request, appear in a court of law as an expert witness for federal, state, local, and foreign courts. My areas of expertise are CEW operation and data recording, CEW data downloading and interpretation, CEW data evidence recovery, Axon video and sensor product operation and recording, Axon body worn camera (BWC) downloading/uploading, log analysis, and video recovery.



I have appeared in United States Federal and State Courts, and international court, and have been accepted as an expert witness pertaining to the technical aspects of the TASER M26C CEW, TASER M26 CEW, TASER X26E CEW, X2 CEW, X26P CEW, TASER CAM recorder, TASER CAM-HD recorder, Axon Body 1, Axon Flex 1, and Axon Body 2 BWC operation and recordings to device memory.

I have written over 400 analysis reports regarding the data analysis of Axon CEWs, cameras, and software.

I continue to be responsible for authoring and maintaining TASER brand product test standards and managing third party laboratory certifications to those standards.

#### **Product Compliance Manager**

As the Product Compliance Manager, I reported to the Vice President and Associate General Counsel and had the responsibility to: ensure that TASER brand and Axon products complied with U.S. and international standards and regulations regarding radio frequencies, Bluetooth, Wi-Fi, LTE, and other wireless standards and regulations, product safety and various other product related standards; and coordinated approval for use of Axon's products in foreign countries. I was also responsible for third party laboratory certifications to TASER brand product test standards. I also continued to retain the duties of the Technical Forensic Specialist. I was also a volunteer member of the Axon Emergency Response Team and Critical Event Response Team.

#### **Technical Compliance Manager**

As the Technical Compliance Manager, I reported to the Quality Manager and had the responsibility to: ensure that TASER brand and Axon products comply with U.S. and international standards and regulations regarding radio frequencies, Bluetooth, Wi-fi, and other wireless standards and regulations; and coordinate approval for use of Axon's wireless products in foreign countries. I was also responsible for third party laboratory certifications to TASER brand product test standards. I continued to retain the duties of the Technical Forensic Specialist and Validation Test Manager.

#### **Technical Forensics Specialist**

As the Technical Forensics Specialist, I reported to the Vice President and Associate General Counsel. I analyzed technical investigative evidence for Axon's Technical Services Department. Using test equipment and software tools, I determined all possible means to download devices submitted to Axon by customers and/or their representing attorneys for formal investigation, interpret downloaded data, and submit the results to the requesting party in a formal report format, or via phone, email, or in person. I also write expert reports for customers and/or their representing attorneys

and, upon request, appear in a court of law as an expert witness for federal, state, and local authorities. My areas of expertise are CEW operation and data recording, CEW data downloading and interpretation, CEW data evidence recovery, Axon video product operation and recording, Axon body worn camera (BWC) downloading/uploading, and video recovery.

#### **Validation Test Supervisor / Manager**

As the Validation Test Manager, I reported to the Quality Manager. I was responsible for the Validation Test Team's performance and activities. I was responsible for the electrical, firmware, software, mechanical, environmental, and compliance testing of Axon's products. I was a member of all core development teams and the leader in test development for existing products. Under my supervision and management, the following Axon products had been tested and released to production;

- TASER® X26E™ Firmware V18, 19, 20, 21, 22, and 24
- TASER X26 Dataport™ Software v16, v17, v17.9, and v17.9.4
- TASER CAM™ recorder
- TASER CAM Download software v2.0 and v2.4
- TASER C2™ conducted electrical weapon (CEW) and firmware
- TASER C2 Cartridge
- TASER XREP™ CEW and firmware release
- TASER Shockwave™
- TASER X3™ CEW and all firmware releases
- Axon™ PRO recorder and all firmware releases
- EVIDENCE Sync™ Software v1.28, v1.29, v1.30, v1.31, v2.08.5, v2.08.13, v2.09, v2.9.2, and v3.12.41
- TASER Smart™ Cartridge
- TASER Protector™ safe driver system
- TASER X2™ CEW and all firmware releases
- TASER CAM HD recorder and all firmware releases
- Axon Flex™ recorder and all firmware releases
- Axon ETM™ (Evidence Transfer Manager) and all firmware releases.
- TASER CAM (Gen 2) and all firmware releases
- TASER X26P™ CEW and all firmware releases
- Axon Body™ recorder and firmware release
- Axon Mobile apps for iOS and Android mobile devices
- Axon EVIDENCE Mobile apps for iOS and Android mobile devices

I developed and wrote the *TASER Certified Specification Test Procedures* for the X26E, M26, X2, and X26P CEWs. I had trained and/or certified government personnel in testing the X26E CEWs to published specification using the *TASER Certified Specification Test Procedure*. I developed and wrote test plans and specifications for each product validation test sequence and ensured the tests were carried out thoroughly. I was also responsible to

ensure products were in compliance with USA, Canada, and European Union rules and regulations regarding Electro-Magnetic Compliance (EMC) to United States, Canada, and European standards & directives (FCC, ISED, and CE). I was also responsible for performing product analysis and downloads for Axon's customers in relation to various legal investigations and writing reports with investigation findings. I was also responsible for writing expert reports for customer cases that may be involved in litigation. I was also a volunteer member of the Axon Emergency Response Team.

**Research & Development Technician**

As a Research & Development Technician, I was responsible for assisting engineers with prototype development, software/firmware test, test fixture design and development, setting up and monitoring research tests, reporting test results, and troubleshooting.

**2001 – 2005**

**MGE UPS Systems  
Costa Mesa, CA**

**2001 – 2003**

**R&D Test Technician**

**2003 – 2005**

**Test Engineer 1**

As an R&D Test technician and as a Test Engineer 1, I was responsible for the qualification and validation of new products and changes/modifications to legacy products. I was responsible for the electrical, firmware, software, and mechanical testing for all new products, from the Research & Development prototypes to the industrial model. Products that I tested included 120 volt (V) single phase UPS systems, 208 V 3 phase UPS systems, and 480 V 3 phase UPS systems up to 800 kVA output, and up to 600 ampere Static Transfer Switch systems. I also assisted in compliance testing for Underwriters Laboratories® and compliance testing for United States and Canada EMC rules and regulations (FCC and ISED).

**1997 – 2001**

**US Calibration (formerly Educational Services)  
Irvine, CA**

**1997 – 2001**

**Calibration and Repair Technician**

As a Calibration and Repair Technician, I was responsible for calibrating electrical and mechanical test equipment to ANSI standards with traceability to the National Institute of Standards and Technology (NIST). I was also responsible for electronic equipment repair. I was the team leader of a major contract with a large automotive battery manufacturer, AC DELCO, in repairing and calibrating battery charging systems.



### **EDUCATION**

DeVRY University, Pomona, CA

- A.S. in Electronics, 1998 (With Honors graduate)

Irvine Valley College, Irvine, CA

- General credits 1999 - 2000

Saddleback College, Mission Viejo, CA

- General credits 2000 - 2002

### **TRAINING**

Axon Enterprise, Inc.

- Certified TASER Instructor- TASER 2005
- Statistics and Analysis- Arizona State University 2010
- Six Sigma LEAN Training- Arizona State University 2010
- Leadership Training – TASER 2012
- "7 Habits" Management Training- Franklin Covey 2015
- Evidence Handling & Chain of Custody- TASER 2015
- Bio-electricity by *Dr. Mark Kroll, Dr. Dorin Panescue, Dr. Jim Sweeney*, TASER 2016
- Gallup Strengths Builders training- Axon 2018
- Transport of Dangerous Goods, DOT, IATA, IMDG – Axon 2019
- Level 4 CJIS Security Training, CJIS 2019

National Instruments

- LabView Programming 2006

Fred Pryor, Inc.

- Advanced Microsoft Excel 2002

### **SPEAKING ENGAGEMENTS**

- "CEW Forensics"- Presenter at the A.F.T.E. Annual Training Conference, May 2017
- "Testifying" – Co-presenter at the Axon Accelerate Certification Conference, June 2017
- "Testifying on Video Admission" – Co-presenter at the Axon Certification Conference, December 2017
- "Testifying on CEW Logs & Video" – Co-presenter at TASER Master Instructor School, Sanford FL, March 2018
- "Pulse Graphs Analysis" – Co-presenter at TASER Master Instructor School, Sanford FL, March 2018
- "Testifying on CEW Logs & Video" – Co-presenter at TASER Master Instructor School, Toronto ON, May 2018
- "Deep Dive on CEW Pulse Graphs" – Presenter at Axon Accelerate Conference, June 2018

- "Drop 'em, Soak 'em, How We Test Our CEWs" – Presenter at Axon Accelerate Conference, June 2018
- "Understanding Your CEW Data" – Co-Presenter at Axon Accelerate Conference, June 2018
- "Testifying on Video Admission" – Co-presenter at the Axon Certification Conference, June 2018
- *Electrical Weapon Charge Delivery with Arcing* – Presenter of Poster Presentation at IEEE EMBC 2018, Honolulu HI, July 2018
- "Testifying on CEW Logs & Video" – Co-presenter at TASER Master Instructor School, Mesa AZ, November 2018

### **MEMBERSHIPS**

- Member, Institute of Electrical & Electronic Engineers (IEEE)

### **PUBLICATIONS**

- *Electrical Weapon Charge Delivery with Arcing* - 2018 – Chiles, Nerheim, Brave, Panescue, Kroll - IEEE EMBC 2018
- *TASER CEW Wire Analysis* – 2019 – Chiles, BD – Researchgate 2019
- *Conducted Electrical Weapon Controlled-Charge Delivery* – [In Press] 2020 - Chiles, B., Nerheim, M., Brave, M., Panescu, D., Kroll, M.W. - *Conf Proc IEEE Eng Med Biol Soc*, vol. 42, pp. tbd, and *Conf. Of Canadian Medical and Biological Engineering Society*, August 2020.

### **EXPERT TESTIMONY**

*Refugio Nieto and Elvira Nieto v. City and County of San Francisco*, United States District Court for the Northern District of California, Civil Action No. C14-03823-NC

- Deposition on September 28, 2015 in Phoenix, AZ
- Trial Testimony on March 7, 2016 in San Francisco, CA

*Commonwealth of Pennsylvania v. Lisa Joellen Mearkle*, Dauphin County Court of Common Pleas, Criminal Docket CP-22-CR-0002379-2015

- Trial Testimony on November 3, 2015 in Harrisburg, PA

*Catrice Pierre, et al v. Lee Hardy, et al*, U.S. District Court, Eastern District of Louisiana, Civil Action No. 12-1891

- Deposition via telephone on December 21, 2015 from Scottsdale, AZ, both parties counsel in Metairie, LA
- Trial Testimony on September 13, 2016 in New Orleans, LA.

*International Brotherhood of Police Officers, Local 537 – Jonathan Adams v. City of Pueblo, CO.*, Arbitration Tribunals of the American Arbitration Association, Case No. 01-15-0005-0390

- Arbitration Testimony on March 23, 2016 in Pueblo, CO

*The State of North Carolina v. Bryon Vassey.*, State of North Carolina, County of Brunswick, In the General Court of Justice, Superior Court Division, Case No. 14-CRS-000247

- Trial Testimony on April 28, 2016 in Bolivia, NC

*The State of California v. Ignacio Canela*, Superior Court of California, County of San Diego, Central Division, Case No. SCD251838

- Trial Testimony on May 23, 2016 in San Diego, CA

*Robert Jackson III v County of San Bernardino, et al*, United States District Court, Central District of California, Case No. EDCV 13-01650 JGB (DTB)

- Deposition via telephone on May 25, 2016 in Scottsdale AZ, both parties counsel in Woodland Hills, CA
- Trial Testimony on July 14, 2016 in Riverside, CA

*The Commonwealth of Virginia v. Stephen Rankin*, Portsmouth Circuit Court, Case No. 15-1398

- Trial Testimony on July 29, 2016 in Portsmouth, VA

*The State of South Carolina v. Michael Slager*, Charleston County Judicial Center, Case No. 09C-0303420

- Trial Testimony on November 7, 2016 in Charleston, SC

*The State of Georgia vs. Marcus Eberhart and Howard Weems*, Fulton County Superior Court, Criminal Division, Case No. 15SC136846,

- Trial Testimony on December 9, 2016 in Atlanta, GA

*Travis Hermiz vs. City of Royal Oak Police Chief, Budzynowski, Wern, et al*, United States District Court, Eastern District of Michigan, Southern Division, Case No. 16-11214

- Trial Testimony on September 26, 2017 in Detroit, MI

*Shainie Lindsey, et al. vs. City of Pasadena, et al*, United States District Court, Central District of California, Case No. 16-CV-8602-SJO(RAOx)

- Deposition Testimony via telephone on November 29 & 30, 2017 in Scottsdale, AZ

*Allan F. White, et al. vs. Bradley County, et al*, United States District Court, Eastern District of Tennessee, Case No. 1:16-CV-322

- Deposition Testimony via telephone on December 5, 2017 in Scottsdale, AZ

*April Damiani, vs. Michael Allen, et al*, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB

- Deposition Testimony via telephone on February 5, 2018 in Scottsdale, AZ

*Hererra vs. The State of Arizona, et al*, United States District Court, District of Arizona, Case No. CV14-2278

- Trial Testimony on September 18, 2018 in Tucson, AZ

*Kitchen vs. Tegtmeier, et al*, United States District Court, Northern District of Illinois, Eastern Division, Case No. 1:15-cv-06781

- Trial Testimony on October 17, 2018 in Chicago, IL

*Inquest in the Death of Josh Pitt*, In the Bedfordshire & Luton Coroner's Service, Luton, United Kingdom

- Inquest Expert Testimony on January 10, 2019 in Luton, England, UK

*Aguilar -v- LAPD*, United States District Court, Central District of California, Case No. 2:17-cv-04382

- Trial Testimony on May 1, 2019 in Los Angeles, CA

*Grand Jury Investigation*, Circuit Court of the Second Judicial Circuit in and for Franklin County Florida, Case No. 2019-002726

- Grand Jury Testimony on July 11, 2019 in Apalachicola, FL
- Commonwealth of VA -v- Douglas Johnson*, Circuit Court of the State of Virginia, in the Circuit Court of the Twentieth Judicial Circuit, Case No. CR00032244
  - Trial Testimony on August 22, 2019 in Leesburg, VA
- The State of Florida -v- Nikolas Cruz*, Circuit Court of the 17<sup>th</sup> Judicial Circuit, in and for Broward County, Florida, Case No. 18014129CF10A
  - Deposition Testimony on October 4, 2019 in Scottsdale, AZ (via Zoom video stream/telephone)
- Rakeyia Scott -v- The City of Charlotte*, In the General Court of Justice, State of North Carolina, County of Mecklenburg, Superior Court Division, Case No. 18-cvs-16700
  - Deposition Testimony on November 8, 2019 in Scottsdale, AZ
- The State of Oklahoma -v- Byron James Shepard*, In the District Court of the Twenty-Third Judicial District of the State of Oklahoma Sitting in and for Pottawatomie County, Case No. CF-2017-176
  - Trial Testimony on November 21, 2019 in Shawnee, OK
- Frazier -v- Erik Miller*, Montana Third Judicial District Court, Powell County, Case No. DV-17-97
  - Trial Testimony on December 5, 2019 in Deer Lodge, MT
- Sneed -v- Michael, et al*, In the Circuit Court of Jackson County, State of Missouri, Case No. 1816-CV-25106
  - Deposition Testimony on January 15, 2020 in Phoenix, AZ
- April Damiani, vs. Michael Allen, et al*, United States District Court, Southern District of Indiana, New Albany Division, Case No. 4:16-cv-53-RLY-TAB
  - Trial Testimony on January 24, 2020 in Evansville, IN
- Whobrey -v- City of Danville*, United States District Court, Central District of Illinois, Urbana Division, Case No. 19-cv-2074
  - Deposition Testimony on May 5, 2020 in Scottsdale, AZ (via online video stream)
- Henderson -v- City of Torrance*, United States District Court, Central District of California, Case No. 2:18-cv-03918-MWF-Ex
  - Deposition Testimony on June 8, 2020 in Fountain Hills, AZ (via online video stream)
- Grand Jury Hearing*, Circuit Court of the Second Judicial Circuit in and for Leon County Florida, Case No 2020-00043446.
  - Grand Jury Testimony on September 3, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)
- Grand Jury Hearing*, Office of the District Attorney, Westchester County, NY, Case No HB20-074.
  - Grand Jury Testimony on October 28, 2020 in Westchester, NY (via video stream from Scottsdale AZ)
- Adkins -v- Roberts*, United States District Court, Northern District of Florida, Panama City Division, Case No. 5:18-cv-271-MCR/MJF.
  - Deposition Testimony on December 1, 2020 in Tallahassee, FL (via video stream from Scottsdale AZ)

TASER X26P CEW Log 2018-05-26 0009

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EVIDENCE

CASES

DEVICES

REPORTS

ADMIN

HELP

HALEY, DENNIS (PD 07)  
Last login 04 Jun 2018  
[KON OUT]

ALL EVIDENCE

MY EVIDENCE

SHARED EVIDENCE

EVIDENCE MAP

IMPORT EVIDENCE

CITIZEN EVIDENCE

TASER X26P CEW Log 2018-05-26 0009

ADD ID

ADD CATEGORY

DOWNLOAD	FLAG	REASSIGN	AUDIT TRAIL	DELETE
▶ Armed		1 Events Duration 7s		04 Jun 2018 07:02:50 - 03:00
▶ SPTM EOB		1 Events Duration 31s		04 Jun 2018 07:03:21 - 03:00
▶ Armed		1 Events Duration 9s		15 Apr 2018 09:32:17 - 01:00
▶ EPPM EOB		1 Events Duration 32s		15 Apr 2018 09:32:09 - 01:00
▶ Armed		1 Events Duration 33s		25 May 2018 15:23:05 - 04:00
▶ SPTM EOB		1 Events Duration 40s		25 May 2018 15:23:45 - 01:00
▶ USB		1 Events Duration 32s		26 May 2018 00:10:24 - 04:00
◀ Prev 1 2 3				



MANAGE EVIDENCE ACCESS



INSIDE MY AGENCY

None added &gt;

OUTSIDE MY AGENCY

None added &gt;

TASER X26P CEW Log 2018-05-26 0009

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No Location Added

#### METADATA

Assigned To:  Amos, Jacob (PD258)

Recorded On: May 26, 2018 12:09 AM - 04:00

Uploaded On: May 26, 2018 12:09 AM - 04:00

Uploaded By:  Moss, Erica (PD52)

Deletion Scheduled For: Nov 21, 2018 11:09 PM - 05:00

File Size: 5.6 KB

#### SOURCE

Serial: X13005RSK  
Model: TASER X26P

#### CASES

No associated cases

#### CATEGORIES

ADD  
CATEGORY

#### TAGS

Add tags by typing and pressing Enter

No tags have been added yet

#### DESCRIPTION

No description has been added yet

SWITCH TO: LEGACY PAGE

#### NOTES

No notes have been posted yet



TASER X26P CEW Log 2018-05-26 0009

Page 3 of 3

POST NOTE

Evidence.com 2018.6.0 (2018.6.0-release-2018-06-15752) - 30.0 / INTERNETEXPLORER / 11 © 2018 Axon Enterprise, Inc. All Rights Reserved.  
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**TASER Information**

Dept. DANVILLE POLICE DEPT.  
 Serial X13006R3K  
 Model TASER X26P  
 Firmware Version Rev. 04.032  
 Device Name X13006R3K  
 Health Active

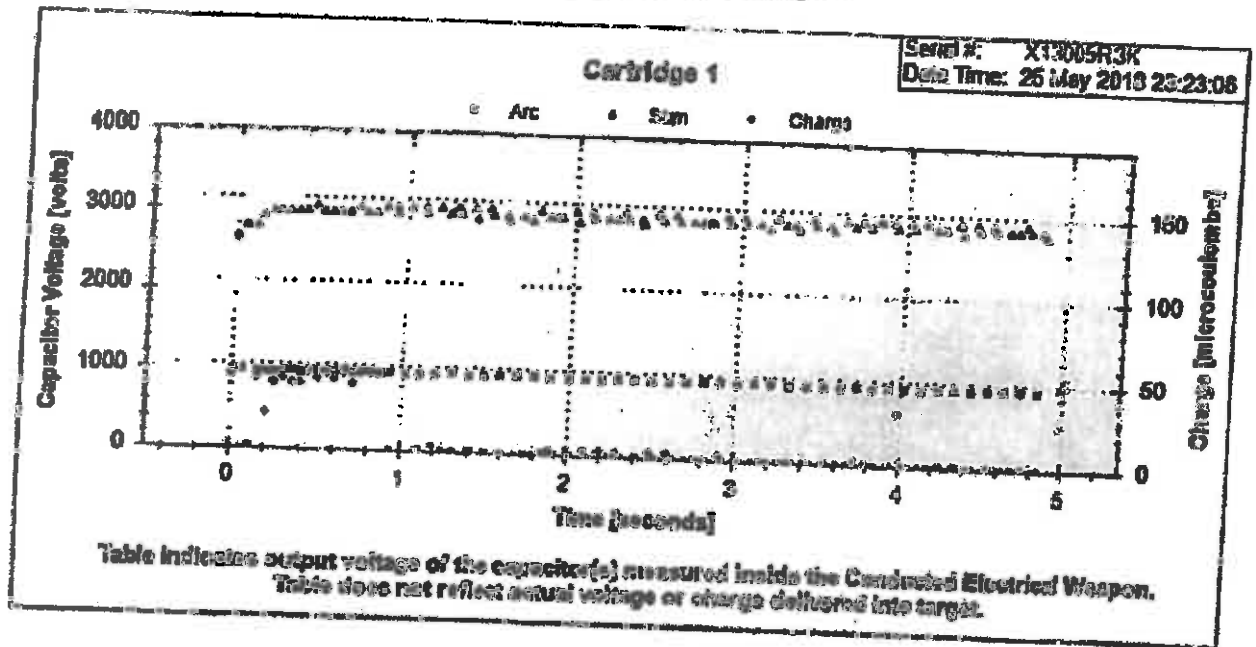
**Report Generated by**

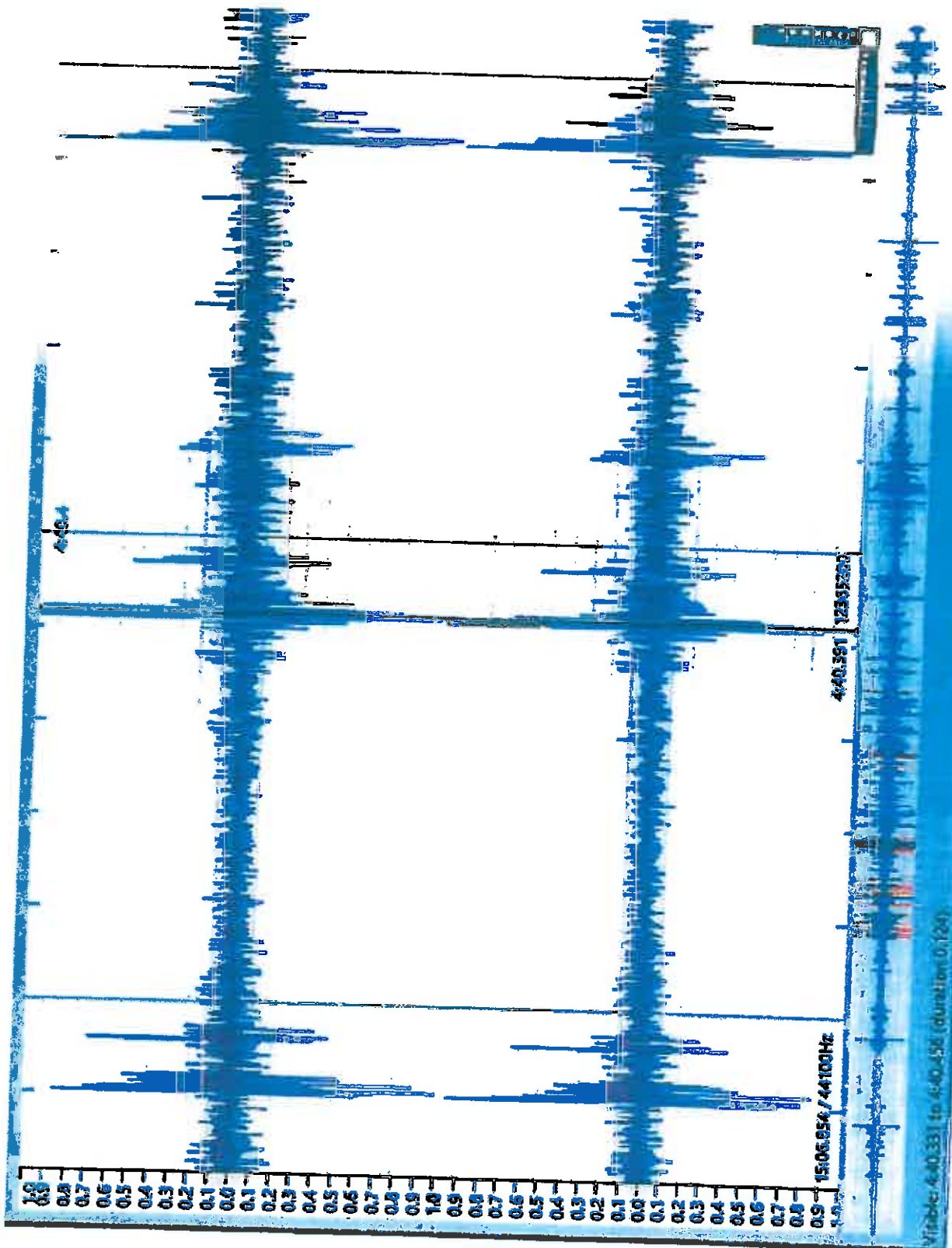
Name Haley, Derrin  
 Badge ID PD17  
 Local Timezone Eastern Standard Time (UTC-04:00)  
 Generated On 28 May 2018 18:18:18

**Device (X26P)**

Seq #	Local Time [dd/mm/yyyy HH:mm:ss]	Event [Event Type]	Duration [Seconds]	Temp [Degrees Celsius]	Batt Remaining [%]
1	25 May 2018 23:28:05	Armed			
2	25 May 2018 23:29:08	Trigger	5	30	83
3	25 May 2018 23:29:40	Safe	25	22	82
4	25 May 2018 23:23:45	SPPM ECR	SPPM Broadcast End		
5	28 May 2018 00:10:24	USB			
6	28 May 2018 00:10:38	Time Sync	From 28 May 2018 00:10:58' to 28 May 2018 00:00:38'		
					Unknown

# Pulse Log Graph





Visible: 440.331 to 440.456 (duration 0.124)



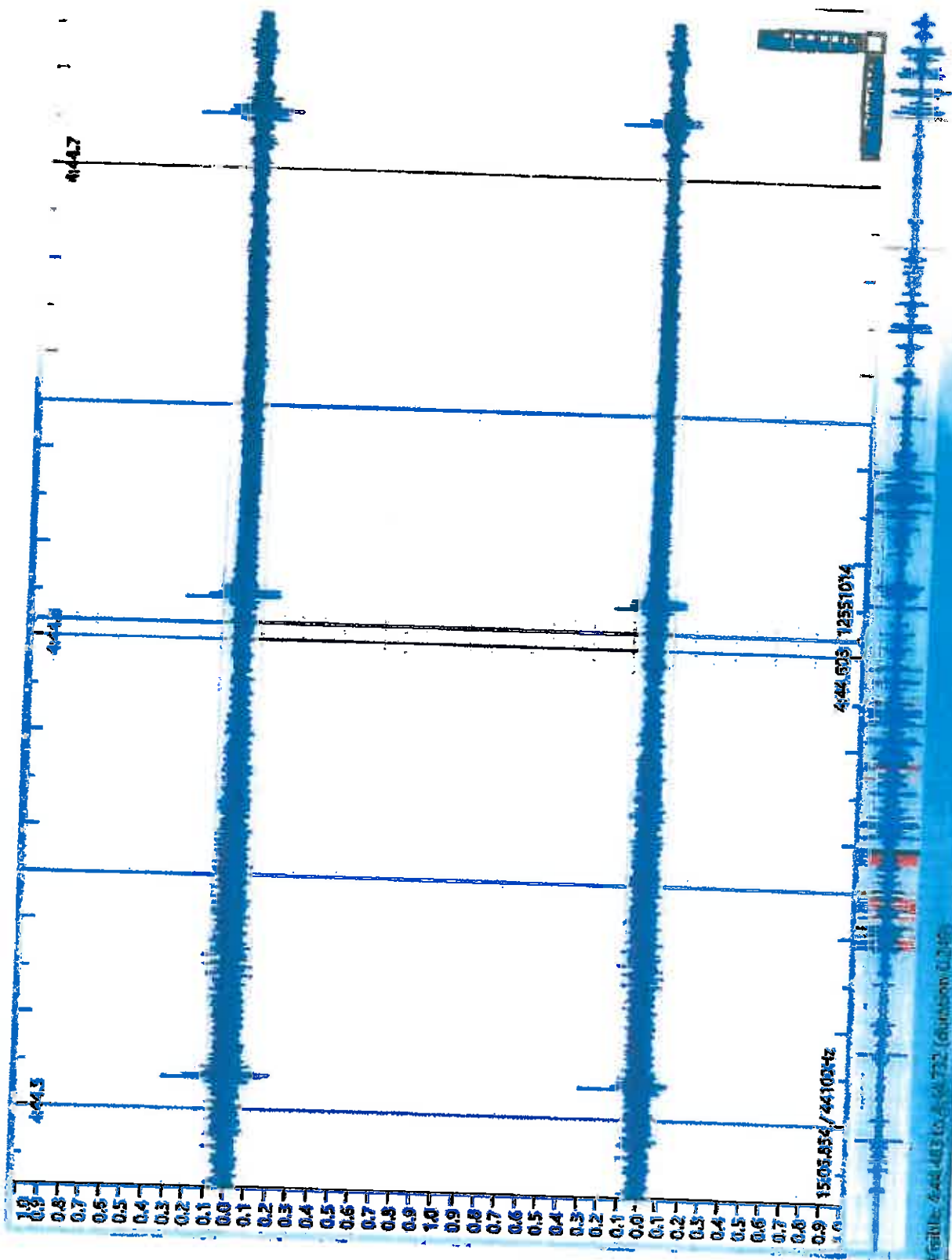
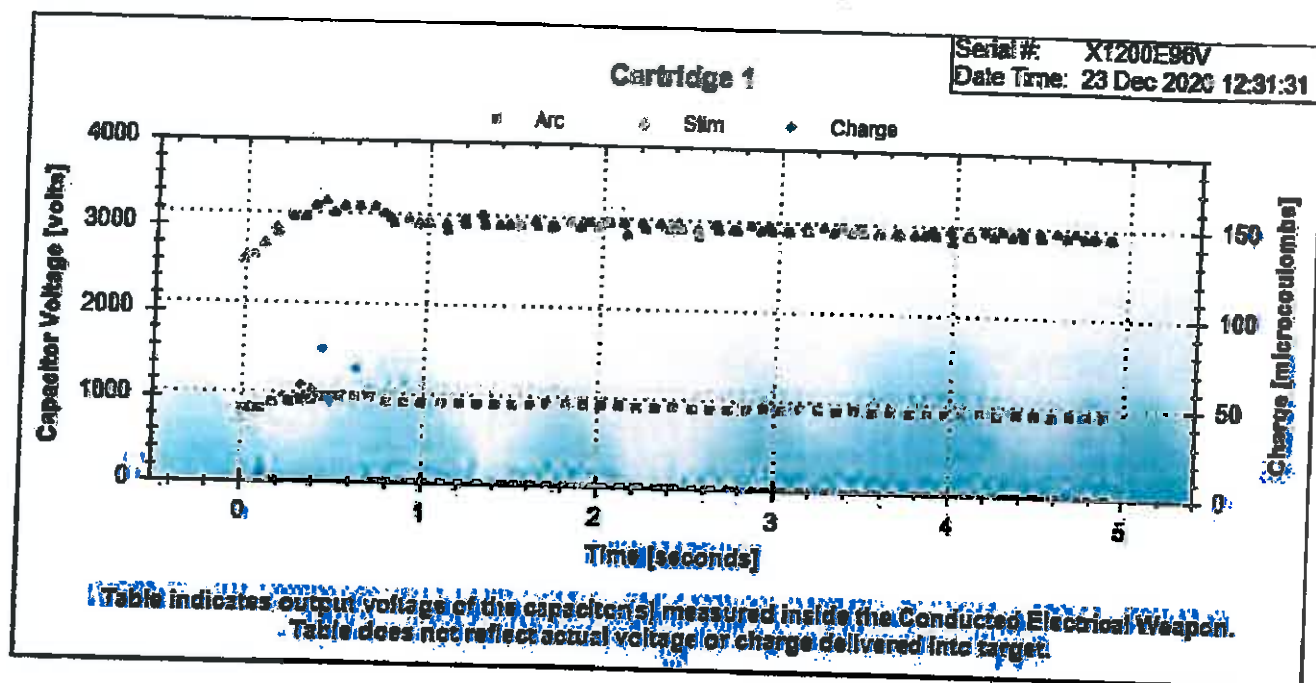


EXHIBIT  
4

# Pulse Log Graph







2020-12-23 T19:31:01  
AXON FLEX 2 X830874

EXHIBIT  
6